

## **SECTION 04810**

### **UNIT MASONRY ASSEMBLIES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Concrete Block.
- B. Clay Facing Brick.
- C. Mortar and Grout.
- D. Reinforcement and Anchorage.
- E. Flashings.
- F. Accessories.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 03200 - Concrete Reinforcement: Reinforcing steel for grouted masonry.
- B. Section 05500 - Metal Fabrications: Loose steel lintels.
- C. Section 06100 - Rough Carpentry: Nailing strips built into masonry.
- D. Section 07840 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.
- E. Section 07900 - Joint Sealers: Backing rod and sealant at control and expansion joints.

##### **1.03 REFERENCE STANDARDS**

- A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 2005.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2005.
- C. ASTM A 82/A 82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- E. ASTM A 641/A 641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009.
- F. ASTM C 90 - Standard Specification for Loadbearing Concrete Masonry Units; 2006b.
- G. ASTM C 91 - Standard Specification for Masonry Cement; 2005.
- H. ASTM C 129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2006.
- I. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar; 2004.
- J. ASTM C 150 - Standard Specification for Portland Cement; 2007.
- K. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006.
- L. ASTM C 216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2007a.
- M. ASTM C 270 - Standard Specification for Mortar for Unit Masonry; 2007a.

- N. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout; 2007.
- O. ASTM C 476 - Standard Specification for Grout for Masonry; 2008.
- P. ASTM D 4637 - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2004.

#### **1.04 SUBMITTALS**

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.

#### **1.05 QUALITY ASSURANCE**

- A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

### **PART 2 PRODUCTS**

#### **2.01 CONCRETE MASONRY UNITS**

- A. Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated on the drawings for specific locations.
  - 2. Special Shapes: Provide non-standard blocks configured for corners and lintels.
  - 3. Load-Bearing Units: ASTM C 90, normal weight.
    - a. Hollow block.
    - b. Exposed faces: Manufacturer's standard color and texture.
  - 4. Non-Loadbearing Units: ASTM C 129.
    - a. Hollow block.
    - b. Normal weight.

#### **2.02 BRICK UNITS**

- A. Facing Brick: ASTM C 216, Type FBS, Grade SW.
  - 1. Color and texture: Match existing face brick.
  - 2. Reuse of brick: When possible reuse brick from selectively demolished portions of exterior wall indicated on drawings.
  - 3. Nominal size: As indicated on drawings.

#### **2.03 MORTAR AND GROUT MATERIALS**

- A. Masonry Cement: ASTM C 91, Type N.
  - 1. Colored mortar: Premixed cement as required to match existing mortar. Colored mortar is only used at face brick. Manufacturer's standard grey at all other locations.
- B. Portland Cement: ASTM C 150, Type I; color as required to produce approved color sample.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Mortar Aggregate: ASTM C 144.
- E. Grout Aggregate: ASTM C 404.

- F. Water: Clean and potable.
- G. Accelerating Admixture: Nonchloride type for use in cold weather.

#### **2.04 REINFORCEMENT AND ANCHORAGE**

- A. Manufacturers of Joint Reinforcement and Anchors:
  - 1. Dur-O-Wal: [www.dur-o-wal.com](http://www.dur-o-wal.com).
  - 2. Hohmann & Barnard, Inc: [www.h-b.com](http://www.h-b.com).
  - 3. Masonry Reinforcing Corporation of America: [www.wirebond.com](http://www.wirebond.com).
  - 4. Substitutions: See Section 01600 - Product Requirements.
- B. Reinforcing Steel: Type specified in Section 03300; size as indicated on drawings; galvanized finish.
- C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- D. Single Wythe Joint Reinforcement: Truss type; ASTM A 82/A 82M steel wire, mill galvanized to ASTM A 641/A 641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- E. Multiple Wythe Joint Reinforcement: Truss type; fabricated with moisture drip; ASTM A 82/A 82M steel wire, hot dip galvanized after fabrication to ASTM A 153/153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

#### **2.05 FLASHINGS**

- A. EPDM Flashing: ASTM D 4637, Type II, 0.040 inch thick.
- B. Lap Sealant: Butyl type as specified in Section 07900.

#### **2.06 ACCESSORIES**

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
- C. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06100.
- D. Weeps: Molded PVC grilles, insect resistant.
  - 1. Manufacturers:
    - a. Dur-O-Wal: [www.dur-o-wal.com](http://www.dur-o-wal.com).
    - b. Hohmann & Barnard, Inc: [www.h-b.com](http://www.h-b.com).
    - c. Masonry Reinforcing Corporation of America: [www.wirebond.com](http://www.wirebond.com).
    - d. Substitutions: See Section 01600 - Product Requirements.
- E. Cavity Vents: Molded PVC grilles, insect resistant.
  - 1. Manufacturers:
    - a. Dur-O-Wal: [www.dur-o-wal.com](http://www.dur-o-wal.com).
    - b. Hohmann & Barnard, Inc: [www.h-b.com](http://www.h-b.com).
    - c. Masonry Reinforcing Corporation of America: [www.wirebond.com](http://www.wirebond.com).
    - d. Substitutions: See Section 01600 - Product Requirements.
- F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

## **2.07 MORTAR AND GROUT MIXES**

- A. Mortar for Unit Masonry: ASTM C 270, using the Proportion Specification.
  - 1. Masonry below grade and in contact with earth: Type S.
  - 2. Exterior, loadbearing masonry: Type S.
  - 3. Exterior, non-loadbearing masonry: Type N.
  - 4. Interior, loadbearing masonry: Type S.
  - 5. Interior, non-loadbearing masonry: Type O.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match existing mortar, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Grout: ASTM C 476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

### **3.02 COLD AND HOT WEATHER REQUIREMENTS**

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

### **3.03 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  - 1. Bond: Running.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches.
  - 3. Mortar Joints: Concave.
- D. Brick Units:
  - 1. Bond: Running.
  - 2. Coursing: Three units and three mortar joints to equal 8 inches.
  - 3. Mortar Joints: Concave.

### **3.04 PLACING AND BONDING**

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Remove excess mortar and mortar smears as work progresses.
- D. Interlock intersections and external corners.

- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

### **3.05 WEEPS/CAVITY VENTS**

- A. Install weeps in cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
- B. Install cavity vents in cavity walls at 32 inches on center horizontally below shelf angles and lintels, and near top of walls.

### **3.06 CAVITY MORTAR CONTROL**

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

### **3.07 REINFORCEMENT AND ANCHORAGE - GENERAL**

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Lap joint reinforcement ends minimum 6 inches.

### **3.08 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHER MASONRY**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Lap joint reinforcement ends minimum 6 inches.

### **3.09 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Lap joint reinforcement ends minimum 6 inches.

### **3.10 MASONRY FLASHINGS**

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
  - 1. Extend flashings full width at such interruptions and at least 4 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
  - 2. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend plastic and EPDM flashings to within 1/4 inch of exterior face of masonry.

### **3.11 LINTELS**

- A. Install loose steel lintels over openings as indicated.
- B. Maintain minimum 8 inch bearing on each side of opening.

### **3.12 GROUTED COMPONENTS**

- A. Lap splices minimum 24 bar diameters.

- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.

### **3.13 CONTROL AND EXPANSION JOINTS**

- A. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- B. Size control joint in accordance with Section 07900 for sealant performance.

### **3.14 BUILT-IN WORK**

- A. As work progresses, install built-in metal door frames, wood nailing strips, and anchor bolts and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

### **3.15 CUTTING AND FITTING**

- A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.

### **3.16 CLEANING**

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.

### **3.17 SCHEDULES**

- A. Exterior Wall: Composite masonry with an exterior wythe of brick veneer, bonded with wire ladder reinforcement to inner wythe of interior facing split faced concrete block masonry (CMU) with 2 inch (50 mm) air space.
- B. Interior Partitions: Single wythe concrete block units.

**END OF SECTION**